



Making and Tinkering in 4-H

Session at the National Association of Extension 4-H Agents Conference
October 27, 2015, 01:00PM - 02:15PM, Broadway 4

Making and tinkering have tremendous potential to elevate what 4-H does well, providing experiential and inquiry-based learning opportunities, with a spirit of innovation, creativity, and entrepreneurship. This session will help support 4-H professionals understand the Maker Movement and tinkering through small group discussions with experts. Participants will plan and develop their own strategy that builds on local strengths and resources, considers potential challenges and limitations and is designed to have an impact on youth.

Enter your name and sign-up at: <http://bit.ly/1JwrQIt>

Download handouts and resources at: <http://www.extedtechs.org/>

Part I: 4-H Maker Faire - 1:00-1:25pm

Open Source Electronics <i>Tim Ewers, Idaho</i> tewers@uidaho.edu	Open Source Electronics is a general term for the free-license access to a multitude and ever-expanding array of electronics hardware and software. The open source movement has lowered barriers and created communities that have made exploring, learning, and innovating with electronics more affordable and supported. This session will introduce the Arduino Uno Platform as one of the many types of open source products available for physical computing. Participants will learn to play with circuits, using LEDs, motors, and sensors, and coding to change the behavior of an electronics-based creation.
3D Printing <i>Bob Smith, Illinois</i> rasmth@illinois.edu	3D printing is a technology that 4-H staff are just beginning to incorporate into their programs. For those new to 3D printing it might see it as overwhelming and a little bit scary. This conversation will help those that are interested learn about what to look for when purchasing a 3D printer, resources and software to use with 3D printing, and some ideas for project youth can complete using a 3D printer. JLearn how easy it is to incorporate this new and exciting technology into your program!
Tinkering with Robotics <i>Saundra Frerichs, Nebraska</i> Sfrerichs3@unl.edu	Engineer a robot with a plastic cup, felt markers, motor, battery, wire and an eraser. What can is its purpose? Can you construct a robot from a toothbrush? What else would you need? – Learning robotics by tinkering with everyday objects.
E-Textiles <i>Saundra Frerichs & Steven Worker</i>	E-textiles are thread and fabrics that enable digital components and electronics to be embedded in them using conductive threads, fabrics, batteries, and LEDs.

Part II: Roundtables - 1:30-1:45 / Rotate / 1:45-2:00 / Rotate / 2:00-2:15

4-H and The Maker Movement

Paul Hill, Utah
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Maker Movement: A term referred to the increasing number of people employing do-it-yourself (DIY) and do-it-together (DIT) techniques and processes to develop unique technology projects which they share with others. Involvement in the Maker Movement is growing across the nation. 4-H has an opportunity to engage with new audiences by applying the existing skills and knowledge. Why? Because we were doing it first, before it was cool. Dare I say, “4-H started the Maker Movement!” We just haven’t innovated in the direction of sophisticated devices and gadgets, such as 3D printers, robotics and electronic devices, using diagrammed, textual and or video demonstration. The Maker Movement needs the support of 4-H by way of leadership, organization, club structure and everything else we bring to the table.

We are makers too! eXtension recently announced the launch of a Maker Community for Extension professionals who are involved in the Maker Movement, or who want to be. Chances are that you are already a Maker; you just need to start sharing your projects with a community. Visit <http://extedtechs.org/maker> to join the Maker Community. We’ll be doing Twitter chats and webinars about important topics like, how you can teach STEM abilities through Maker projects and how to actually join the Maker Movement as a 4-H program.

3D Printing: Lessons Learned and Best Practices

Bob Smith, Illinois
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How and where do you start? This discussion will offer guidance on how to successfully implement a workshop or camp for youth (and staff) new to 3D printing. Included will be hands on demos of several software resources available to design new objects or modify objects designed by others. The discussion will also include what to look for in a 3D printer with comparisons of different models used at various sites in Illinois.

Structuring Making and Tinkering Experiences

Saundra Frerichs, Nebraska
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One of the great resources of 4-H is curriculum that is research-based and experiential. One of the important attributes of Making and Tinkering is that the experience is learner-driven rather than curriculum-driven. So, how do we start to bring these two together? This conversation will demonstrate a process for using 4-H curriculum resources to create Making and Tinkering experiences and discuss how a 4-H approach can enhance Making and Tinkering. We use these five questions to examine the structure of the learning experience and how it contributes to learning – Who decides? How it is connected? What is the mode of learning? What is the role of failure? What is the outcome?

It Looks Like Fun, But What are Youth Learning?

Steven Worker, California
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Making and tinkering have been recognized for their practices that facilitate learning and development including fostering problem solving and metacognitive skills, improving engagement in STEM activities, improving initiative and intentionality, heightening creativity, and deepening understanding of STEM concepts. New strategies, beyond pre/post surveys, will be needed to more accurately evaluate learning through making and tinkering activities. This roundtable will introduce a learning dimension framework from the Exploratorium’s Tinkering Studio and ask participants about potential embedded evaluations strategies we can use in 4-H to assess learning.